

RP142

**Rockfall Hazard Classification and Mitigation
Phase 1**

**(Cooperative Transportation Research Program: University of Idaho
and the Idaho Transportation Department)**

Summary Report

Prepared for

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INTRODUCTION

The Federal Highway Administration (FHWA) began a concerted effort in the 1980's to address rockfall hazards along highways as part of its overall mission to improve highway safety. The Oregon Department of Transportation (ODOT) took the lead in developing and testing various data collection procedures for a standardized Rockfall Hazard Rating System (RHRS). A fairly comprehensive study of rockfall sites along Oregon highways in 1989-91 included approximately 3,000 rock cuts and was used as the final stage of development and testing of the RHRS. Results of this extensive work were summarized and adapted into a training manual for the National Highway Institute Course No. 130220 (FHWA Publication No. SA-93-057, November 1993: *Rockfall Hazard Rating System*).

Several Western states (including Arizona, Colorado, and Washington) have since joined Oregon in the implementation of highway rockfall hazard rating and mitigation programs in line with these FHWA guidelines. The goals of such programs are: 1) to improve highway conditions for enhanced public safety and rockfall maintenance (cleanup) planning/budgeting, and 2) to identify and prioritize rockfall hazard sites, so that highway funds can be allocated efficiently for construction projects or counter-measures to mitigate the hazards. A systematic rockfall hazard assessment has not been completed for Idaho highways, though significant efforts to inventory and describe rockfall sites have been initiated by individual Idaho Transportation Department (ITD) personnel in the past five years (especially in ITD Districts 3 and 6).

This current research program is intended to assist ITD with a systematic evaluation of rockfall hazards along Idaho highways and with the development of a computer database useful for cataloging, sorting, and prioritizing rockfall-prone sites. The approach is based on earlier FHWA work that recommended a two-step process for rockfall hazard ratings: 1) a preliminary rating to categorize slope segments as having a high, moderate, or low potential of rockfall on the roadway; and 2) a detailed hazard rating based on the RHRS developed by the Oregon DOT for FHWA.

The primary specific tasks addressed during Phase 1 (1999-2000) of this Idaho rockfall research project were:

1. A rockfall maintenance survey form was designed and distributed to road maintenance personnel in each ITD district, so that local ITD personnel could identify known rockfall areas and help prioritize them for further study and treatment.
2. Rockfall hazard rating systems based on available FHWA procedures and those from several western states were reviewed and then adapted for use in Idaho. The key modifications involved traffic (load) volume and maintenance/remediation efforts.

3. Trial field evaluations using the Idaho rockfall hazard rating system originally were planned only for ITD Districts 2 and 3, but several field sites actually were analyzed in each of the six Districts.

Project coordinators and representatives from ITD for this project were:

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Boise, Idaho 83707

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Boise, Idaho 83707

ROCKFALL INVENTORY SURVEYS

As a means to identify rockfall problem areas along Idaho's highway systems, a comprehensive inventory procedure needed to be implemented. Because highway maintenance crews are very familiar with rockfall cleanup history and frequency, a rockfall survey form (field sheet) was developed for crew members to fill out for highway segments located within their operating work areas. This survey form is based on a scheme slightly different from that used in the preliminary rockfall hazard rating system used by the Oregon DOT.

The Oregon preliminary rating system (Publication No. FHWA SA-93-097, 1993) was based on two criteria: 1) estimated potential for rockfall on roadway, and 2) historical rockfall activity. The potential for rockfall is the primary key for classifying the rock slope, with the historical evidence used as a supplement when further clarification is needed. The classes for rockfall hazard are given by "A" (high), "B" (moderate), "C" (low). None of the C-rated slopes in the Oregon study were investigated further, because, as the FHWA Publication states, "... the risk of a hazardous situation occurring [for a C slope] is nonexistent-to-low" and it was deemed "... not worthwhile to clutter the database with information on slopes of this nature." Only the A-rated (a total of 501 slopes) and B-rated (a total of 839 slopes) rock slopes in Oregon were analyzed further using the more detailed Rockfall Hazard Rating System (RHRS).

Our approach to the preliminary rockfall rating scheme in Idaho was to include only those rock slopes that 1) had a history of delivering rockfall debris to the roadway, or 2) those slopes that had a significant potential to deliver debris to the roadway even if no rockfall cleanup had been conducted there before. These rock slopes were assigned a preliminary rockfall hazard classification on the survey forms using the following severity scale:

- 1 -- Rockfall debris occasionally sloughs onto the roadway, and the deposited material usually is less than a few inches (10 cm) in mean diameter.
- 2 -- Rocks with a mean diameter of up to 6 inches (15 cm) land on the roadway several times a year, causing hazardous driving conditions during some of these events. There is a potential for even larger rocks up to 18 inches (45 cm) to hit the roadway during severe storm events.
- 3 -- Rocks are deposited on the roadway frequently or in such a manner that would produce hazardous driving conditions (such as rockfall on a blind curve). Such sites likely will need cleanup attention by maintenance crews during or immediately after storm activity. Other recognizable site features include: potential catastrophic failure of the rock slope, a likelihood of large rocks (greater than 18 inches) reaching the roadway, or noteworthy geologic features that potentially could generate sizable volumes of rockfall debris.

ITD materials personnel in Districts 3 and 6 already had completed some preliminary rockfall "mapping" in recent years; this available information was incorporated into the survey database. New rockfall inventories were conducted in the remaining Districts during 1999 and 2000 either by ITD maintenance personnel or by University researchers.

The data sheet used to record the rockfall sites is presented in Appendix A. Copies of the individual data sheets for each District also are given in Appendix A. Results of the rockfall survey are summarized in Table 1.

Table 1. Summary of rockfall survey data and preliminary assessment of rockfall severity.

ITD District	Total Number of Rockfall Sites	Rockfall Severity Rating (Number of Sites)		
		1	2	3
1	167	116	17	34
2	310	104	136	70
3	125	54	46	25
4	216	120	61	35
5	83	52	25	6
6	86	18	53	15

In addition to the above information, the “worst” rockfall sites were identified based on comments from ITD maintenance personnel or based on the high-hazard potential of areas that may not have a history of significant rockfall cleanup. These sites represent those areas most worthy of receiving future rockfall mitigation efforts, as indicated by the preliminary rockfall hazard assessments:

District 1

SH 3 mp 55.0
mp 73.7
SH 5 mp 10.0
SH 97 mp 70.3
mp 94.8
mp 95.7
mp 96.0
SH 200 mp 41.5
mp 56.1

District 2

US 12 mp 33.45
mp 56.45
mp 76.0
mp 78.8
mp 116.6
mp 120.1
mp 133.8
mp 159.6
mp 168.5
mp 172.4
US 95 mp 198.0
mp 231.2
mp 286.2
SH 7 mp 51.0
SH 11 mp 4.2
SH 13 mp 14.5
mp 19.4
SH 14 mp 7.6
mp 10.1
mp 12.9
mp 16.6
mp 33.0
mp 42.0

District 3

US 95 mp 144.6
mp 173.6
mp 175.1
SH 21 mp 11.1
mp 18.0
mp 73.8
SH 55 mp 67.7
mp 76.5
mp 80.7
mp 91.9
mp 93.5
mp 94.2
mp 150.2
mp 150.6
mp 151.9

District 4

SH 75 mp 155.7
mp 199.2
mp 202.1
mp 203.0
mp 205.1
mp 208.3
mp 213.1
mp 220.8

District 5

US 89 mp 35.8
mp 37.1
SH 34 mp 26.0
SH 36 mp 114.6

District 6

US 26 mp 374.5
mp 389.0
US 93 mp 264.0
mp 273.5
mp 281.6
mp 283.3
mp 319.5
mp 324.5
SH 47 mp 11.6
SH 75 mp 224.0

ROCKFALL CLASSIFICATION AND HAZARD RATINGS

The Rockfall Hazard Rating System (RHRS) developed by the Oregon DOT for FHWA (FHWA Publication No. SA-93-057, November 1993) included ten rating categories, four of which were based on slope and road geometry, three based on geologic factors, one based on climate, one based on average vehicle risk (a function of traffic volume, travel length of rockslope exposure, and posted speed limit), and one based on rockfall history. Each category was divided into four classifications which received numerical scores based on an exponential weighting system: 3 points for low impact on rockfall hazard, 9 points for moderate impact on rockfall hazard, 27 points for moderately high impact on rockfall hazard, and 81 points for high impact on rockfall hazard. After measuring and scoring a given rockfall site, the ten category scores then were summed to give a total rockfall hazard score, with a higher score indicating greater rockfall hazard.

Rockfall rating categories used in the RHRS are listed below:

1. Slope height (vertical height of slope measured in feet);
2. Ditch effectiveness (rated according to catchment effectiveness);
3. Average vehicle risk;
4. Percent of decision site distance (function of posted speed limit), as calculated by the ratio of actual site distance to the decision site distance, expressed as a percent;
5. Roadway width including paved shoulders;
6. Geologic structural condition (case 1 for hard rock, case 2 for differential erosion);
7. Geologic shear strength (rock friction, case 1) or erosion rates (case 2);
8. Size of rock blocks or volume of rockfall event;
9. Climate and presence of water on the slope; and
10. Rockfall history.

This basic format has been retained for the Idaho rockfall hazard rating system, but we have followed more closely the modified scoring system used by the Arizona DOT, which simplified the original RHRS to require fewer numerical calculations (such as those used for the RHRS average vehicle risk and decision site distance). Also, the proposed Idaho rockfall rating scheme has been separated into two major subdivisions, one that describes the physical hazards at each rockfall site and one that describes the potential risk (associated with personal injuries, loss of life, or financial losses/costs). The Idaho rockfall rating categories are described below:

Sources of physical hazard (potential for damaging rocks to land on the roadway)

1. Slope continuity (severity of rockfall launching features on the slope);
2. Size of rock blocks;
3. Dimensions of catch-ditch;
4. Geologic factors (hard rock outcrops, case 1; differential erosion features, case 2);
5. Climate and precipitation factors; and
6. Rockfall history (frequency of rockfall on the roadway).

Sources of risk (personal injuries and loss; maintenance costs)

1. Traffic volume based on Average Daily Traffic (ADT) counts;
2. Sight distance (distance needed for a motorist to see and avoid a 6-in. object);
3. Roadway width including paved shoulders (avoidance room for motorists); and
4. Maintenance and cleanup efforts/costs.

The rockfall hazard evaluation form currently being tested for Idaho roadways is presented in Appendix B. The slope height category in the original RHRS has been replaced with the slope configuration criteria, because height alone does not provide a unique measure of a rockslope's potential to deposit rock debris on a roadway. For example, a 50-ft high vertical rock cut with a reasonable catch-ditch (say, 15 ft) presents less of a hazard than a 30-ft high 1:1 rock cut with one or more launching features and the same catch-ditch width. Another difficulty in measuring slope height in the field is the ambiguity inherent in trying to distinguish rockfall originating from the artificial cutslope and that originating farther uphill on a steep natural slope.

During the summer of 2000, University personnel used these rockfall evaluation forms to rate 60 rockfall sites in Districts 1-5. Sites in District 6 previously had been rated by ITD personnel using a different evaluation procedure; adjusting and adapting these earlier rockfall hazard scores is currently under evaluation. It was our initial goal in each District to apply this detailed rating scheme on six sites that scored a severity "3" on the preliminary rockfall survey, on three sites that scored "2", and on three sites that scored "1". This plan was altered for District 5 due to its lack of readily accessible severity "3" sites. A statistical summary of the rockfall hazard ratings is given in Table 2.

These results indicate the general consistency between the rockfall survey scores and the rockfall hazard rating scores. That is, generally the sites with rockfall severity "1" had the lowest hazard rating scores and those with severity "3" had the highest hazard rating scores. The exception to this relationship is for the sites in District 1, where the severity "1" rock slopes scored unusually high on the overall rockfall hazard rating system.

For all 60 sites combined, the physical hazard ratings ranged from 41 to 387 (only mean values are shown in Table 2), with a score greater than about 200 indicating fairly high hazard. The risk ratings ranged from 12 to 138 (only mean values are shown in Table 2), with a score greater than about 100 indicating fairly high risk. Thus, even with this limited sample of rockfall sites around the state, we can begin to see that an overall rockfall hazard rating of 300 or greater (i.e., 200 + 100) likely is indicating that such sites are a high priority for future mitigation efforts.

These initial results also suggest that a simpler, streamlined version of the rockfall hazard rating system may be applied to provide similar outcomes in terms of priority rankings. For example, two key terms in the physical hazard rating categories are catch-ditch dimensions and rockfall history. Scores from these two categories could be added to the risk ratings to obtain a modified total score (excluding slope continuity, size of blocks, geologic factors, and

climate). However, some confusion may arise regarding a rock slope that poses a significant potential hazard by its geometry above the roadway, but actually has very little rockfall history. To handle this situation, the category for rockfall history could be changed to include “rockfall history” or “potential for a major one-time rockfall event.”

Another possible approach is to use a two-fold criteria for assessing rockfall mitigation priorities. An example would be where the highest-priority sites could be identified by “a risk score greater than 125, or a risk score greater than 100 and a hazard score greater than 250.” Such modifications to this initial rockfall hazard rating system for Idaho need to be investigated further.

Table 2. Summary of rockfall hazard ratings for trial sites along Idaho roadways.

ITD District	Initial Rockfall Severity Rating	No. Sites	Rockfall Hazard Rating Scores				
			Risk Mean	Haz. Mean	Total:	Min.	Max. Mean
1	1	4	81	181	96	351	262
	2	3	93	82	97	235	175
	3	6	85	188	154	387	273
2	1	3	60	110	93	211	170
	2	3	61	126	109	328	187
	3	5	56	166	159	344	222
3	1	3	51	112	137	207	163
	2	3	65	142	105	285	207
	3	6	64	262	177	407	326
4	1	3	49	192	105	387	241
	2	3	67	217	265	315	284
	3	6	65	311	247	501	376
5	1	6	35	69	63	171	104
	2	4	49	96	99	201	145
	3	2	93	222	285	345	315
Totals	1	19	55	133			188
	2	16	67	133			200
	3	25	73	230			302

DATABASE DEVELOPMENT

Though not a part of the original work tasks on this project, development of a computerized database of rockfall hazard information has been initiated using Microsoft ACCESS-2000. Two data tables have been constructed to date: one consisting of the rockfall survey data with the severity scores (1, 2, 3) and the other consisting of the 60 sites where the more detailed rockfall hazard ratings were obtained. Digital photograph images also were obtained at all 60 sites, with the intent of including such image files as attachments or tags in the Idaho rockfall database. Due to the massive data storage requirements for these images, it is likely that they will be converted to “jpeg” or “pdf” files and placed on a website that can be accessed from the core database.

There are also “size of record” problems associated with large data tables within ACCESS. Thus, we are working to develop several internal switchboards through which users can navigate through the database and sort out the information they need, such as: identifying those rockfall sites in a District that have a risk rating greater than 125 and a rockfall history score (or potential one-time event score) of 27 or greater.

Much additional work is needed to develop a working rockfall database for ITD use. This activity is included as a task item in the proposal for Phase 2 work on this project.

CONCLUSIONS AND RECOMMENDATIONS

Rockfall maintenance surveys have been completed for roadways in all six ITD Districts. Based on rockfall history and cleanup activities, the most severe rockfall problems occur in Districts 2 and 3, followed by Districts 1 and 6. Follow-up rockfall hazard ratings were conducted on about 12 sites in Districts 1-5 using the Idaho rockfall hazard rating system, which was adapted from the method used by the Arizona DOT. These preliminary results suggest that the Idaho system may be simplified and still retain an adequate quantitative sensitivity to rank and prioritize rockfall hazards.

The three proposed work tasks in Phase 1 were completed. In addition, we began development on an ACCESS database that will contain Idaho rockfall hazard information and digital images of selected sites around the state. More field work is needed to gather additional rockfall hazard data and more office work is needed to expand the data and operational flexibility of the database.

Proposed work tasks for Phase 2 of this project (2000-2001) are described below:

Task 4. Based on information provided from the Phase 1 rockfall studies completed statewide, roughly 6-10 sites will be identified for further study in each District. These sites will be evaluated using the Idaho rockfall rating system and one or more of its modifications as suggested from the Phase 1 work.

Task 5. Collect and organize cost data and other case study information on rockfall mitigation projects recently completed in other Western states. This will supplement and update the information presented by FHWA in the rockfall course notes printed in 1993-94. This compilation will provide ITD with useful information for rockfall project design and cost-estimation.

Task 6. Organize and input the rockfall inventory and hazard rating information, as well as the cost data, into a computer data base that can be readily accessed by ITD personnel.

A final report will summarize the rockfall project and make recommendations for hazard mitigation along Idaho highways. Not all rockfall sites in the state will be rated during this project, and some follow-up work by ITD or NIATT personnel will be needed to complete the hazard rating statewide.

Appendix A

Field Sheets for Rockfall Inventory Surveys

EVALUATED BY: _____ DATE: _____
DISTRICT: _____ ORG UNIT: _____ ORG LOCATION: _____
E-MAIL: _____ TELEPHONE: _____

[illegible]**SEVERITY:**

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

U

Bill Casaul

Pollock

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Ken King DATE: 10-6-99
 DISTRICT: 01 ORG UNIT: 7 ORG LOCATION: Sandwich To Mountain Lake
 E-MAIL: _____ TELEPHONE: 208-772-1211 Bill Capaul

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
Hwy-200	39.0	39.1	1	LT OFF 5' DITCH Bedrock
1	39.2	39.3		
12	39.39	39.40		
13	39.7	39.8		Variable Ditch
14	40.1	40.2		
15	40.3	40.4		
16	40.42	40.5		
17	40.92	41.0		
18	41.7	41.5	3	
19	41.7	41.8	3	
20	42.6	42.7	1	
21	42.79	42.8		
22	43.05	43.1		
23	43.4	43.45		Business Loop Variable Ditch w/ Fence
24	44.8	44.85		Collisions
25	45.4	45.6		
26	51.7	51.95	1	LT 10' Ditch Bedrock
27	56.1	56.15	3	Variable Ditch
28	56.7	56.7	3	
29	56.8	56.85	1	
30	57.3	57.4		
31	61.6	61.72		No Ditch
32	62.0	62.1		5' Ditch Collisions
33	62.7	62.75		LT & RT OFF 5' Ditch Bedrock

NOTES:

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

DATE: 10-7-99
EVALUATED BY: Ken King
DISTRICT: 01 ORG UNIT: ORG LOCATION: Hwy. 95 Copeland TSP to Eastport
E-MAIL: TELEPHONE: 206-772-1211 Bill Capaul

ROUTE	BEGIN M.P.	END M.P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
39	Hwy. 95	523.16	523.76	1 RT. off 523.25 ENTR OF CUT, NO Ditch
35		523.535	523.575	Red rock, VARIABLE Ditch
36		523.74	524.0	VARIABLE Ditch
37		524.13	524.20	8' Ditch
38		525.18	525.26	GRAVEL, 8' Ditch
39		525.34	525.6	Red rock & TIL 8' Ditch
40		527.03	527.1	LT GRAVEL, 8' Ditch
41		528.10	528.13	Red rock w/ TIL ON FLANKS NO Ditch
42		532.22	532.25	GRAVEL, 8' Ditch
43		532.36	532.44	8' Ditch
44		532.57	532.65	1 RT 5' Ditch
45		533.65	533.77	3 LT 5' Ditch
46		533.15	533.18	3 5' Ditch
47		533.20	533.23	1 5' Ditch
48		533.38	533.42	1 5' Ditch
49		533.48	533.49	TIL NO Ditch
50		533.53	533.62	TIL NO Ditch
51		533.82	533.88	4 FENCED 2' Good Ditch
52		533.93	533.96	3 FENCED 2' Good Ditch
53		534.6	534.7	3 VARIABLE Ditch
54		535.12	535.17	1 VARIABLE Ditch
55		536.96	537.05	GRAVEL 8' Ditch

NOTES: Realignment possible in 5 years

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

ДГНБ

Stake
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NOTES:

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
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- EVERITY:**
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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Ken King

DATE: 11-4-99

DISTRICT: 01 ORG UNIT: 01

ORG LOCATION: ST. MARIES T. PLUMMER

E-MAIL: _____

TELEPHONE: 766-777 1211 Bill CAPPAUL

[illegible]

NOTES:

SEVERITY:

- EVERITY:
1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
 2. Rock debris occurs on the roadway several times a year with the larger rocks > 6 inches) causing hazardous conditions during some of these events.
 3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

DONE

EVALUATED BY: Ken King DATE: 11-4-93
 DISTRICT: 01 ORG UNIT: _____ ORG LOCATION: From T-90 To Hwy-97
 E-MAIL: _____ TELEPHONE: 208-772-1211 Bill Capaul

SH 97
 97
 97

ROUTE	BEGIN M.P.	END M.P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
78	Hwy-97	95.930	3	RT OF E Bedrock some Guard Rail
79		95.741	3	No Ditch Bedrock
80		95.564	3	3' Ditch
81		94.142	3	Variable Ditch
82		93.009	3	3'
83		92.346	1	3'
84		92.048	1	Variable Ditch
85		84.682	1	No Ditch
86		84.445	1	"
87		82.476	1	3'
88		81.857	1	RT. 3'
89		81.939	1	LT. 3'
90		81.182	1	RT. 3'
91		73.180	1	RT 3'
92		73.232	1	RT 3' Colluvium w/ Bedrock
93		72.105	1	RT ? Bedrock
94		71.702	1	RT 0'
95		70.258	3	RT & LT 5' Ditch
96		69.049	1	RT Variable Ditch
97		66.718	2	RT Variable Ditch
98		66.460	2	5'
99		66.355	2	5'
100		66.126	1	3'
		END		

NOTES: ANY TYPE WEATHER CONDITIONS CAUSES SERIOUS ROCK FALL
 ON THIS STRETCH OF ROAD, MP 96.033 TO 92.048

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

state highway?

EVALUATED BY: Ken King DATE: 11-3-99
 DISTRICT: 01 ORG UNIT: _____ ORG LOCATION: T-90 To CLARKIA
 E-MAIL: _____ TELEPHONE: 208-772-1211 Bill Capaul

	ROUTE	BEGIN M.P.	END M.P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
→ 101	HWY-3	70.762	70.837	1	RT. OF & No Ditch Bedrock
102		71.218	71.367	1	Guard Rail up
103		71.370	71.690	3	3-15' VARIABLE DITCH
→ 104		73.581	73.911	3	LT. 3'-15' Variable
105		73.958	74.069	1	2' Ditch
106		74.111	74.278	1	6' Ditch
107		78.807	78.852	2	2' Ditch
108		79.163	79.189	2	6'
109		79.321	79.385	2	3
110		79.485	79.508	2	RT 2'
111		80.011	80.115	2	RT 2'
→ 112		80.249	80.292	2	RT 5'
113		80.459	80.680	2	RT 6'
114		80.767	80.940	2	RT 6'
115		81.141	81.194	2	RT 3'
116		83.704	83.805	2	RT 8'
117		92.517	92.727	2	LT. 3' Bedrock W/ Colluvium
118		92.784	94.0	2	3
119		94.551	94.629	2	3' Bedrock
→ 120		101.108	101.5	1	RT 3' Colluvium
→ 121		104.312	104.369	1	3'-8' Bedrock
122		105.50	105.788	1	3'
123		109.0	109.237	1	3'
124		111.180	111.267	1	9'
125		112.448	112.561	1	LT. 6'

NOTES:

- SEVERITY:**
1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Ken King
 DISTRICT: 01 ORG UNIT: _____
 E-MAIL: _____

11 2 99
 DATE: 11-1-99
 ORG LOCATION: Interstate 90 To Mountain Line
 TELEPHONE: 208-772-1211 BILL CAPRUL

	ROUTE	BEGIN M.P.	END M.P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
181	I-90	16.957	18.975	1	RT. OF E 9' Ditch Bedrock w/TL Bedrock
182		18.759	19.69		LT. 18'-36' Ditch, Bedrock
183		<u>20.846</u>	20.853		No Ditch Bedrock: Stone Guard Rail
189		21.360	21.365		10' Ditch
135		21.525	21.530		9'
136		21.551	21.555		9'
137		24.798	24.654		10'
138		25.232	25.297		RT 10' Variable Ditch Bedrock
139		25.861	25.888		LT. 9'
140		25.934	26.058		RT. 12' Bedrock
141		26.090	26.230		LT. 12' Ditch
142		29.840	29.926		RT Variable Ditch
143		30.375	30.408		
144		30.951	30.977		10' Ditch
145		31.795	31.846		12' Ditch Bedrock
146		63.200	63.234		12'
147		63.351	63.549		Variable Ditch
148		63.718	63.802	3	20' Ditch, Guard Rail w/2' Face Bedrock
149		66.962	67.020	3	12' Ditch
150		67.086	67.161	3	3'
151		67.188	67.251	1	15' COLLUSION
152		71.098	71.180		12'
153		71.281	71.374		15'
154		71.669	71.763		15'
155		72.0	72.168		

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EVALUATED BY: Ken King DATE: 11-2-99
DISTRICT: 01 ORG UNIT: _____ ORG LOCATION: Interstate 90 to Montana line
E-MAIL: _____ TELEPHONE: 208-772-1211

NOTES:

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EVALUATED BY: Ken King FROM DATE: 11-2-99
DISTRICT: 01 ORG UNIT: _____ ORG LOCATION: Interstate 90 To Burke
E-MAIL: _____ TELEPHONE: 208-772-1211 Bill Capaul

Ken King

From

DATE: 11-2-99

DISTRICT:

04

ORG UNIT:

ORG LOCATION:

INTERSTATE 90 TO BURKE

E-MAIL:

TELEPHONE:

208-772-1211 Bill CAPRAUL

state
highway?

→

SEVERITY:

- EVERITY:
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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: BLAKE THOMPSON DATE: 4-21-00
DISTRICT: 2 ORG UNIT: 025621 ORG LOCATION: OROFINO
E-MAIL: BLAKET@OROFINO-ID.COM TELEPHONE: 208-476-4433

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 7	50.9	51.34	3	BIG ROCK & SLIDES
S	41.76	41.8	2	12" ROCK
US 12	56.43	56.45	3	CORNERS
	62.6		2	
	62.7		2	
SH 11	0.48		1	
	1.98		2	
	3.1		2	
	3.49	3.51	3	
	3.71	3.76	3	
	4.18	4.39	3	BOTTOM SLIDE HERE
	6.29	6.33	2	
	6.53	6.57	2	
	31.17		2	
	37.87		2	
US 12	15.92	15.95	3	
	17.95	18.1	1	
	19.01	19.015	2	
	19.34	19.75	2	
	21.9	22.00	1	
	22.08	22.2	2	
	22.55	22.63	3	
	22.72	22.80	1	
	22.9	23.0	1	
	23.1		3	

NOTES:

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: D. Stephens DATE: 8-26-99
DISTRICT: 2 ORG UNIT: _____ ORG LOCATION: Grangeville
E-MAIL: dstep@camnet.com TELEPHONE: 1-208-799-4291

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
001546 US95	220.30	220.50	3	Some Large Rock
	223.9	224.1	1	
	224.2	224.5	1	Rolling Rocks Contaminate truck Ramp
	224.6	SPOT	1	
	224.8	SPOT	1	
	225.05	225.15	1	
	225.6	225.7	1	
	225.9	SPOT	1	
	226.05	226.2	1	
	226.3	226.4	1	
	226.5	226.65	1	
	226.9	227.05	2	
	227.2	SPOT	1	
	227.4	228.8	2	
	228.9	SPOT	2	
(A)	229.0	229.2	3	300-500 cyds of Rock Fall annually
	229.2	229.4	2	
	229.7	229.85	2	
	229.95	230.1	1	
	230.2	230.5	1	
	230.6	SPOT	3	
	230.75	230.95	3	
(B)	231.0	231.4	3+	W.B. Cut 1000-2000 cyds Annually
	231.9	232.1	1	
	232.2	232.4	1	

NOTES:

- * (A) Roadway protected by Port-a-Rail - seems to be effective
- (B) Very Severe and hazardous Rock Fall area. Rock Fall will happen any time, has been known to close US95 several times in the past few years.

SEVERITY:

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EVALUATED BY: D. Stokerson DATE: 8-26-99
DISTRICT: 2 ORG UNIT: _____ ORG LOCATION: Granville
E-MAIL: djstok@Comcast.net TELEPHONE: 1-208-797-4291

8-26-55

dy slip @ Games net. Com

TELEPHONE:

1-208-797-4291

001546
7

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Dave Stephens DATE: 8-17-99
 DISTRICT: 1 ORG UNIT: _____ ORG LOCATION: Reeds B&E
 E-MAIL: clgstep@comcast.net TELEPHONE: 208-795-2429

201970

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH. 14	0	6	2	
	6	6.1	3	LARGE ROCKS
	6.1	7.1	2	
	7.1	7.2	3	Creek that Floods And Slides (closes Road)
	7.2	17.5	2	
	7.5	7.6	3	Slides (closes Road)
	7.6	7.8	2	
	7.8	7.9	3	
	7.9	8.5	2	
	8.5	8.7	3	
	8.7	10.0	2	
	10.0	10.1	3	Slide (closes Road)
	10.1	12.8	2	
	12.8	12.9	3	Slide (closes Road)
	12.9	14.7	2	
	14.7	14.8	3	
	14.8	15.2	2	
	15.2	15.3	3	
	15.3	16.5	2	
	16.5	16.6	3	Slide (closes Road)
	16.6	17.1	2	
	17.1	17.2	3	
	17.2	21.0	2	
	21.0	21.1	3	LARGE ROCKS
	21.1	24.3	2	

NOTES:

Also At Mile Post 5.5 is A Slide Area

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: JD Spilane DATE: 8-17-99
 DISTRICT: 2 ORG UNIT: _____ ORG LOCATION: Reeds 13A
 E-MAIL: jdspilane@camnet.com TELEPHONE: 208-799-4291

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 14	24.3	24.4	3	LARGE ROCK
	24.4	25.0	2	
	25.0	25.1	3	LARGE ROCK
	25.1	25.8	2	
	25.8	25.9	3	LARGE ROCK
	25.9	27.0	2	
	27.0	27.2	3	SLIDES
	27.2	28.3	2	
	28.3	28.4	3	LARGE ROCK
	28.4	30.3	2	
	30.3	30.6	3	LARGE ROCK
	30.6	32.0	2	
	32.0	34.5	3	LARGE ROCK & SLIDE (CLOSE RD)
	34.5	37.0	2	
	37.0	37.1	3	
	37.1	38.0	2	
	38.0	38.1	3	SLIDES (CLOSE RDA)
	38.1	39.0	2	
	39.0	40.0	3	LARGE ROCKS
	40.0	41.8	2	
	41.8	43.0	3	LARGE ROCKS & SLIDES
	43.0	44.0	1	
	44.0	44.1	3	
	44.1	45.0	2	
	45.0	45.1	3	

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: D. Ste Larson DATE: 8-17-99
DISTRICT: _____ ORG UNIT: _____ ORG LOCATION: Reeds Bn
E-MAIL: dystepe@comcast.net TELEPHONE: 208 795-4291

[illegible]

NOTES:

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: D. Stjepan DATE: 8-26-99
DISTRICT: 2 ORG UNIT: Orangeville ORG LOCATION: Orangeville
E-MAIL: dystop@comcast.com TELEPHONE: 1-208-779-4291

[illegible]

NOTES:

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Jim Pratt DATE: 3-13-00
 DISTRICT: 2 ORG UNIT: _____ ORG LOCATION: 02542
 E-MAIL: _____ TELEPHONE: 208 924 5602

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 162	04.40	05.4	(1)	5'-10' ditch
S	5.6	5.8	(1)	5' ditch
S	5.8	6.3	(3)	5'-10' ditch
S	15.8	16.0	(1)	very seldom
S	20.5	21.6	(1)	5' ditch
	21.2	21.5	(1)	5' ditch
US 12	70.5	70.65	(1)	5' ditch
S	71.5	71.60	(2)	"
S	72.1	72.36	(2)	"
S	73.35	73.65	(1)	"
S	74.4	75.0	(2)	10' ditch
SH 64	29.90	29.94	(1)	2' ditch
S	28.10	28.4	(1)	"
S	24.50	26.9	(3)	low volume traffic 5/12 speed zone gravel road small ditch

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Jim Pratt

DATE: 3-13-00

DISTRICT: 2 ORG UNIT: _____

ORG LOCATION: 025421

E-MAIL: 1st Craig@comcast.net

TELEPHONE: 208 924 5602

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
US 95	279.5 RH	279.57 RH	1	10' ditch
	280.1 LH	280.33 LH	2	5' ditch
	280.4 RH	280.55 RH	1	concrete rail rocks jump
	280.6 LH	280.65 LH	1	" " " "
	280.65 LH	280.76 LH	2	no rail 10' ditch
	280.8 RH	280.93 RH	2	5' ditch curve
	281.07 LH	281.14 LH	2	10' ditch
	281.23 LH	281.26 LH	1	10' ditch curve
	281.26 RH	281.25 RH	1	concrete rail rock jump
	281.75 LH	281.84 LH	2	5' ditch curve
	282.25 RH	282.33 RH	2	concrete rail large rocks jump
	282.78 LH	282.85 LH	3	5' ditch
	282.9 RH	283.0 RH	2	concrete rail, rocks jump curve, trestle
	284.4 RH	284.53 RH	1	concrete rail small rocks jump
	285.12 RH	285.16 RH	1	" " " "
	285.82 RH	285.87 RH	1	5' ditch
	286.06 RH	286.1 RH	1	concrete rail small rocks jump
	286.17 LH	286.29 LH	3	concrete rail rocks jump
	286.34 LH	286.38 LH	3	" " " "
	286.8 LH	286.88 LH	1	" some rocks jump
	287.34 RH	287.4 RH	2	10' ditch occasional large rocks
	287.7 LH	287.77 LH	1	5' ditch curve
	287.9 RH	288.06 RH	1	10' ditch curve

NOTES:

Except for the few number 3's we don't do a regular rock patrol unless rocks are observed & then only for a short period of time

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: DAVID STEPHENSON DATE: 08-17-99
 DISTRICT: 2 ORG UNIT: _____ ORG LOCATION: GRANGEVILLE
 E-MAIL: dstep@Comcast.Com TELEPHONE: 799-4291

201546

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
4595	184.03	184.50	1	
	188.00	188.05	2	Generally Large Rock
	189.00	189.10	1	
	189.95	189.96	1	
	190.90	—	1	
	191.20	191.50	1	
	192.25	192.30	2	Some Large Rock
	193.85	194.05	1	
	196.30	196.70	1	
	197.40	198.20	3	Generally Large Rock
	198.90	200.00	2	✓ ✓ ✓
	201.10	202.02	3	Some Large Rock
	202.70	202.90	1	
	203.30	203.40	1	
	204.30	204.40	1	
	205.20	205.40	1	
	205.60	205.70	2	Some Large Rock
	206.95	207.05	1	
	207.80	207.90	1	
	209.45	209.60	2	Some Large Rock
	210.55	210.70	1	
	211.10	212.20	2	Some Large Rock
	213.20	213.70	1	
	217.60	217.90	1	
	219.40	219.80	1	

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ROCKFALL SURVEY AND INVENTORY FORM

EVALUATED BY: MARK SCHUSTER DATE: 3-12-00
 DIST. 2 ORG. UNIT 025521 ORG. LOCATION FLEMING
 E-MAIL: marks@camasnet.com TELEPHONE: 208-926-4483

ROUTE	BEGIN M.P.	END M.P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
U.S. 12	150.7	150.9	1	
U.S. 12	151.04	151.3	2	
U.S. 12	151.57	151.64	2	
U.S. 12	152.08	152.1	1	
U.S. 12	152.3	152.6	1	
U.S. 12	153.275	152.35	2	Porta-rail in one spot to catch excessive rockfall
U.S. 12	153.4	153.6	1	
U.S. 12	153.88	154.33	1	
U.S. 12	154.75	154.8	1	
U.S. 12	155.1	155.38	2	
U.S. 12	155.69	155.75	2	
U.S. 12	159.88	157.64	2	
U.S. 12	157.82	157.9	2	
U.S. 12	159.4	159.45	2	
U.S. 12	159.5	159.57	2	
U.S. 12	159.57	159.61	3	Many rocks all year long. Close to a fast corner
U.S. 12	160.57	160.73	1	
U.S. 12	161.29	161.42	3	Large rocks and on a corner.
U.S. 12	164.03	164.04	3	Large rocks and on a corner.
U.S. 12	164.04	164.2	2	
U.S. 12	164.44	164.48	1	
U.S. 12	165.22	165.36	2	
U.S. 12	165.82	165.94	2	
U.S. 12	166.38	166.56	2	
U.S. 12	166.78	167.07	2	
U.S. 12	167.07	167.65	1	
U.S. 12	168.5	168.57	3	Lots of rocks >6". On a corner causing accidents
U.S. 12	168.64	168.69	1	
U.S. 12	169.5	169.69	2	
U.S. 12	169.78	169.88	2	
U.S. 12	169.88	170.42	1	
U.S. 12	170.64	172.68	2	
U.S. 12	170.76	172.25	2	
U.S. 12	172.3	172.44	3	Many rocks on a dangerous corner.
U.S. 12	172.44	173.45	2	

ROCKFALL SURVEY AND INVENTORY FORM

EVALUATED BY: MARK SCHUSTER		DATE: 3-12-00	
DIST. 2	ORG. UNIT 025521	ORG. LOCATION FLEMING	
E-MAIL: marks@camasnet.com		TELEPHONE: 208-926-4483	
ROUTE	BEGIN M.P.	END M.P.	SEVERITY (1-3) ADDITIONAL COMMENTS
U.S. 12	116.5	116.68	3 Rockslides 4-5 times a year. Rocks from 6"-48"
U.S. 12	116.95	117.34	2
U.S. 12	117.56	117.66	2
U.S. 12	118.12	119.26	2
U.S. 12	119.96	120.1	3 Many accidents because rocks close to corner
U.S. 12	120.56	120.66	2
U.S. 12	121.24	121.31	2 Large rocks on corner 1-2 times a year
U.S. 12	121.75	122.08	1
U.S. 12	122.22	122.43	3 Several rocks > 6" in some bad corners
U.S. 12	122.43	122.58	2
U.S. 12	123.6	123.83	1
U.S. 12	124.18	124.24	1
U.S. 12	124.35	125.45	2
U.S. 12	124.84	125.15	2
U.S. 12	125.36	125.58	2
U.S. 12	128.52	121.83	2
U.S. 12	131.12	131.24	2
U.S. 12	131.36	131.56	2
U.S. 12	132.16	132.65	2
U.S. 12	132.82	133.18	2
U.S. 12	133.66	133.87	3 Many large rocks. Many accidents
U.S. 12	134	135	2
U.S. 12	135.6	136.135	1
U.S. 12	136.48	136.85	2
U.S. 12	137.1	137.15	2
U.S. 12	137.25	137.35	3 Many rocks on the end of a corner
U.S. 12	137.53	137.6	2
U.S. 12	138	138.28	2
U.S. 12	139.21	139.25	2
U.S. 12	139.81	139.9	1
U.S. 12	139.95	139.09	1
U.S. 12	140.58	140.75	2
U.S. 12	141.14	141.22	2
U.S. 12	141.77	142.1	2
U.S. 12	142.77	142.87	2
U.S. 12	143.25	143.47	2
U.S. 12	144.18	144.58	1
U.S. 12	145	145.2	2
U.S. 12	145.46	145.57	1
U.S. 12	147.73	147.83	1
U.S. 12	148.065	148.36	2
U.S. 12	148.57	148.7	2
U.S. 12	148.89	148.97	2
U.S. 12	149.07	148.23	2
U.S. 12	149.7	149.9	2

KEY AND INVENTORY FORM				
EVALUATED BY: MARK SCHUSTER			DATE: 3-12-00	
DIST. 2	ORG. UNIT 025521		ORG. LOCATION FLEMING	
E-MAIL: marks@camasnet.com			TELEPHONE: 208-926-4483	
ROUTE	BEGIN M.P.	END M.P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
S. H. 13	11	11.15	1	
S. H. 13	11.27	11.555	1	
S. H. 13	11.74	12.1	1	
S. H. 13	13.85	14.2	2	
S. H. 13	14.333	14.7	3	Many and large rocks >12"
S. H. 13	16.625	17.4	2	
S. H. 13	18.3	18.68	1	
S. H. 13	19.3	19.45	3	Numerous rocks, some large, in a corner
S. H. 13	19.66	19.99	2	
S. H. 13	22.6	22.8	1	
S. H. 13	23.265	23.295	3	Numerous rocks but all small
S. H. 13	25.8	26	1	
S.H.13B	0.52	0.685	3	Many rocks, most small<6"; a few larger
				Have to remove 2-3 times a day in spring
U. S. 12	75.96	76.28	3	Many rocks on corner after every rainfall
U. S. 12	78.55	79.065	3	Many rocks small and large. Numerous accidents
U. S. 12	82.4	82.6	1	
U. S. 12	86.7	86.85	1	
U. S. 12	87	87.06	2	
U. S. 12	87.22	87.409	2	
U. S. 12	90.6	90.7	2	
U. S. 12	91.205	91.32	2	
U. S. 12	92	92.36	2	
U. S. 12	92.44	93.09	1	
U. S. 12	93.32	93.39	1	
U. S. 12	94.95	95.15	2	
U. S. 12	95.85	95.96	3	
U. S. 12	96.07	96.14	2	
U. S. 12	96.52	96.62	2	
U. S. 12	96.813	96.952	3	Numerous after rainfall
U. S. 12	96.952	97.1	1	
U. S. 12	97.666	97.676	1	
U. S. 12	99.05	99.36	2	
U. S. 12	99.94	100.07	3	2-3 Slides per year with rocks 12"-36"
U. S. 12	102.017	102.31	1	
U. S. 12	103.3	103.88	1	
U. S. 12	104.13	104.78	1	
U. S. 12	105.25	105.5	2	
U. S. 12	106.36	106.61	2	
U. S. 12	107	107.06	1	
U. S. 12	107.26	107.45	2	
U. S. 12	108.43	108.67	2	

Route	beg. mil	end mil	severity	comments	foreman	district	location
SH 55	100.78	100.85	2	no to narrow ditch; limited sight distance; decomposing material; mostly small pieces; some larger pieces @ top	Jim Stamma	3	Valley Co.
	100.67	100.72	1	narrow ditch; fairly solid; not too tall			
	149.9	149.95	1	no ditch; curve; large rock pieces; not tall			
	150.07	150.075	2	much in narrow ditch; potential for large rockfall			
	150.18	150.3	3	curve; no ditch; tall slope; high traffic; much debris; different erosion rates; trees			
	150.36	150.48	3	curve; no ditch; tall slope; high traffic; large rockfall potential; poor sight distance; trees			
	150.51	150.595	3	narrow ditch; tall slope; high maintenance area; curve; trees			
	150.6	150.65	3	narrow ditch; tall slope; high maintenance area; sandy soil; pavement damage; trees			
	150.68	150.8	3	narrow ditch; toppling features; soil; high maintenance; large rockfall potential			
	150.88	150.93	2	narrow ditch; toppling features; some large rockfall potential; soil			
	150.95	151	2	narrow ditch; curve; high traffic; debris on road; some rockfall potential; soil; trees			
	151.9	151.94	3	narrow ditch; curve; large cracks; trees			
	151.83	151.87	3	narrow ditch; tall slope; toppling potential; trees; massive			
	151.8	151.81	1	no ditch; small slope; limited sight; soil; trees			
	151.8	151.78	2	no ditch; oversteepened slope; well graded; trees; high traffic; limited sight distance			
	101.675	100.063	1	curve; oversteepened soil & rock			
	99.6	99.81	1	soil; boulders			
	99.48	99.53	1	soil; boulders			
	99.38	99.46	1				
	99.305	99.34	1				
	99.225	99.265	1				
	99.15	99.221	2	soil; boulders			
	99	99.05	1				
	98.8	98.975	3	curve; big rock			
	97.676	98.74	2	soil; rock			
	98.555	98.605	2				
	98.4	98.515	2	soil; rock			
	98.335	98.37	2	soil; rock; decomposition			
	98.275	98.33	1	soil; rock; wide ditch			
	95.16	98.775	1	soil; rock; oversteepened slope; decomp.			
	94.89	94.955	1	curve; limited sight; fair ditch; soil; rock			
	93.96	94.89	3	narrow ditch; curve; decomp.; cracks; tall; soil; trees; poor sight; much debris on shoulder			
	93.75	93.822	2	soil; decomp; narrow ditch; marginal sight			
	93.615	93.675	3	no ditch			

3
to 1
of June

1
3
to 1
of June
3.

SH 55

Route	beg. mil	end mil	severity	comments	foreman	district	location
SH 55	93.435	93.6	3	no to narrow ditch; limited sight distance; decomposing material; large debris; cracks			
	92.94	93.23	2	tall; narrow ditch; cracks; limited sight; large pieces; trees			
	92.675	92.835	2	narrow ditch; cracks; overhanging in places; soil			
	92.465	92.52	2	narrow ditch; soil; large pieces; decomp.			
	92.17	92.22	2	curve; narrow ditch; tall			
	91.825	92.055	3	narrow ditch; curve; tall; cracks; decomposition; soil; trees; overhanging rock; much debris			
	90.258	90.335	2	tall; soil; rock; porter rail; ditch; decomp.			
	89.425	89.475	1	soil; rock; wide ditch; maintenance but not really a hazard			
	89.1	89.265	2	boulders; narrow ditch; soil; rock			
	88.725	88.815	1	oversteepened slope; soil; rock; tall; trees; inadequate ditch; limited sight distance; curve; boulders			
	80.69	80.7445	3	pavement & guardrail damage; curve; decomposition; soil in joints; signs of rock friction on surface			
	90.94	80.9845	3				

3 =>

2



Route	beg. mil.	end mil.	severity	comments	foreman	district	location
SH 95	180.75	180.8	2	curve; tall slope; jointed basalt; no ditch; trees	Charlie Vipperman	3	Adams Co.
	175.1	175.2	3	tall; adequate ditch; rocks on shoulder; guardrail damage; schist/granite; daylighting rock			
	174.85	174.95	2	tall slope; soil/rock; tree debris; adequate ditch; erosion; debris			
	174.65	174.7	2	soil; rock; erosion rates; debris in ditch; trees			
	173.65	173.75	3	no ditch; curve; massive structures; tall slope; narrow road			
	173.54	173.59	2	right side (smaller cut); decomposed material; access behind outcrop; could push debris to riverside			
	173.53	173.61	3	larger cut (left side); randomly jointed; pavement damage; insufficient ditch; decomposing rock; trees; high traffic			
	173.1	173.18	2	no ditch; curve; tall slope; large debris			
	172.92	172.99	2	curve; narrow ditch; poor sight; narrow road; overhanging decomposed material; cracks			
	143.95	144	3	north side; inadequate ditch; rotten basalt; soil interbeds; trees; curve			
	143.95	144	3	north side; inadequate ditch; rotten basalt; soil interbeds; trees; curve			
	144.56	144.6	3	inadequate ditch; randomly jointed, rotten basalt; limited sight distance			
	144.65	144.68	2	curve; poor sight; basalt; layers; soil; poor ditch; brickish clay material			

get
3 on
way
back

3



Route	Beg. mil.	end mil.	severity	additional comments	evaluated by	date	district
SH 21578	78.1	78.26	1	some loose rock; wide ditch	Heather	9/12/1996	3
579	77.66	77.98	2	some loose rock; wide ditch	Grisham		
580	81.96	82	2	one daylighting boulder; wide ditch			
581	81	81.19	1	wide ditch			
582	78.34	78.44	2	gravel and cobble slide; narrow ditch			
583	78.22	78.26	1	narrow ditch			
584	82.16	82.29	2	wide ditch			
585	77.1	77.28	2	some loose rock; wide ditch			
586	76.73	76.89	2	some loose rock; wide ditch			
587	75.45	75.5	2	some loose rock; narrow ditch			
588	75.24	75.3	1	narrow ditch			
589	75.07	75.15	1	wide ditch			
590	74.75	74.8	1	narrow ditch			
591	74.68	74.72	1	narrow ditch			
592	74.48	74.5	1	wide ditch			
593	74.29	74.46	1	wide ditch			
594	73.77	73.8	3	loose cobbles; narrow ditch			
595	72.79	72.85	1	wide ditch			
596	70.9	71	2	some gravel slides; narrow ditch			
597	70.75	70.81	1	narrow ditch			
598	70.7	70.72	1	narrow ditch			
599	70.5	70.57	1	some gravel slides; narrow ditch			
600	69.1	69.2	1	some loose rock; narrow ditch			
601	82.9	83	1	some loose rock; narrow ditch			
602	18.65	18.8	1	some loose rock; narrow ditch			
603	17.9	18.1	2	loose rock; wide ditch; concrete rail			
604	92.6	92.7	1	some loose rock; wide ditch			
605	90.8	90.9	2	some loose rock; narrow ditch			
606	87.5	87.6	1	wide ditch			
607	87.1	87.2	1	daylighting rock mass; wide ditch			
608	97.05	97.2	2	loose sediments and rock spill over ditch and guard rail			
609	96.8	96.95	1	loose gravel; wide ditch			
610	95.6	95.8	2	gravel and cobble slide; wide ditch			
611	98.4	98.6	1	some loose rock; wide ditch			
612	97.6	98	1	some loose rock; narrow ditch			
613	97.45	97.5	2	gravel slide			
614	43.55	43.63	2	loose rock; wide ditch			
615	87.2	87.25	1	no ditch			
616	43.8	43.83	1	loose rock; no ditch			
617	86.18	86.28	1	wide ditch			
618	100.5	100.6	2	loose rock; narrow ditch			
619	103.7	103.9	2	loose rock; no ditch			
620	99.95	100.1	2	loose rock; no ditch			
621	100.3	100.4	1	loose rock; wide ditch			
622	99.9	99.95	1	loose rock; wide ditch			
623	98.4	98.6	1	loose rock; wide ditch			
624	82.83	82.85	1	small gravel slide; narrow ditch			

Route	Beg. mil.	end mil.	severity	additional comments	evaluated by	date	district
→ SH 52 625	38	38.05	1	both sides of road; moderate ditch	Heather	9/10/1996	3
626	38.06	38.07	1	moderate ditch	Grisham		
627	38.15	38.2	1	both sides of road; moderate ditch			
628	38.95	40.02	1	moderate ditch			
629	40.06	40.16	1	moderate ditch			
630	40.17	40.36	1	daylighting rock; moderate ditch			
631	40.37	40.48	1	wide ditch			
→ 632	40.6	40.65	2	daylighting rock over soil; moderate ditch			
633	41.2	41.38	1	daylighting rock; narrow ditch			

From: Keith Nottingham <KNotting@ITD.STATE.ID.US>
To: "Stan Miller (E-mail)" <smmiller@uidaho.edu>
Subject: rockfall survey
Date: Wed, 18 Oct 2000 14:35:35 -0600
X-Mailer: Internet Mail Service (5.5.2650.21)
X-Status:

Here is some data from the Maintenance Foreman in Boise:

SH-21 10.4 to 10.6 severity 1
SH-21 11.0 to 11.1 severity 3, jersey rail both sides of highway not
enough ditch to contain-rocks are large enough to break concrete rail
SH-21 17.21 severity 2, decomposed granite, not enough ditch to
contain
SH-21 17.54 to 18.2 severity 3, very large rock breaks concrete rail

SH-55 51.01 to 51.05 severity 1
SH-55 51.25 to 51.39 severity 2
SH-55 59.17 to 59.25 severity 2
SH-55 60.10 to 60.40 severity 2
SH-55 60.55 to 60.74 severity 2

ALSO, high potential to close rd.:

SH 55 mp 67.7 - 3
mp 76.5 - 3

These were from the survey form you worked out for the maintenance foreman.

(4)

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shan Strommen / Harley DATE: 8/3/99
 DISTRICT: _____ ORG UNIT: Hot ORG LOCATION: Albion, ID Harley, ID
 E-MAIL: slstrom@idwell.uidaho.edu TELEPHONE: (208) 592-1010

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
54 75	210.5	210.6	1	scree, could be seeded to stabilize
	210.6	210.8	1	flat
	210.8	211.2	3	scree, little catchment
	211.2	211.3	1	
	211.3	211.5	2	scree
	211.5	211.6	1	
	211.6	211.8	1	tree over, little veg, steep cut, daylighting fractures, blind curve
	211.8	212.1	2	scree, somewhat away from road, some veg, blind curve
	212.1	212.2	1	
	212.2	212.4	2	
	212.4	212.6	1	
	212.6	213.0	1	flat
	213.0	213.2	3	blind curve, lose debris - almost scree, fills catchment
	213.2	213.4	2	lots of veg, low cut, lose rock > 6 in blind curve
	213.4	214.1	1	flat
	214.1	214.5	1-2	cobbles or bri in catchment and road, some scree, blind curve, no place to pull off
	214.5	214.9	1	flat
	214.9	215.1	1	scree, no catchment, some debris, visibility blocked by throughout
	215.1	215.3	1	
	215.3	215.9	2	
	215.9	216.0	1	
	216.0	216.3	1	lots of veg
	216.3	216.7	1	flat
	216.7	216.8	2	scree, but w/ lots of veg, shows little movement although debris in catchment
	216.8	217.4	1	flat

NOTES:

Some of the m's look bad, but they rarely come down at all.
 From MP. 192.5 to 217 is evaluated with Ron Robinson, the maintenance foreman.

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shari Silvrman ^{Hailey} DATE: 8/3/99
DISTRICT: _____ ORG UNIT: ~~_____~~ ORG LOCATION: Marion, Idaho Hailey
E-MAIL: silv9579@nrcell.vidaho.edu TELEPHONE: (208) 892-8016

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 75	202.9	203.1	3	loose soil and small rocks spilling onto road, for some creep some trees fallen and lying on road side
1	203.1	203.2	2	lots of veg., gentle slope, catchment
	203.2	203.3	1	very low cut, through some loose rock
	203.3	203.4	2	loose rock on hill and soil spilling into catchment, not much veg
	203.4	203.9	1	shallow slopes, lots of veg, catchment, trees show signs of creep
	203.9	204.0	1-2	tall steep slope, vert cut, looks stable but some debris in catchment, which is very small
	204.0	204.1	1-2	gentle slope, some veg, but signs of some full
	204.1	204.2	3	tall steep slope, all rocks, looks fairly stable w/ a couple small rocks in catchment
	204.2	204.4	2	low cut slope w/ some large boulders, loose
	204.4	204.6	3	some slope w/ large boulders, no veg, debris fills catchment, although a couple stable catchment
	204.6	204.8	2	tall, steep slope, lots of dirt & loose rock, but some veg, no evidence of recent movement
	204.8	205.0	1	
	205.0	205.1	3	tall steep cut, seems fairly stable, but big rocks on a curve (inverted)
	205.1	205.2	2	
	205.2	205.8	2-3	tall, steep curve, lots of blind corners
	205.8	206.5	3	tall steep slope, rock debris, hills some catchment, daylighting fractures, not much veg
	206.5	207.6	1	flat slope
	207.6	207.8	3	scree slopes, large boulders, not much catchment, small concrete barrier (smaller than boulders)
	207.8	208.2	1-2	
	208.2	208.5	3	tall, daylighting fractures, scree; curve - blind curve
	208.5	208.8	1	flat
	208.8	209.1	1	
	209.1	209.5	1	flat
	209.5	210.1	1	scree, blind curve, no to little catchment
	210.1	210.5	1-5	flat

NOTES:

~~from~~ see state highway 75 mp. 210.5 to 217.9 for notes

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shari Silverman / Hailey DATE: 9/3/99
 DISTRICT: _____ ORG UNIT: Ut E ORG LOCATION: Ammon, Idaho, Hailey
 E-MAIL: silver957@arell.widaho.edu TELEPHONE: (208) 872-8444

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 75	192.9 - 193.0	193.0	1 2	no drift catchment river on other side of highway, but road is clear → road construction occurring
SH 75	193.	193.	2 1	"
SH 75	194.0	194.1	2	some catchment, large rock & 1 ft. daylighting fractures, near road construction area, road clear of debris
SH 75	194.3	194.8	2	small rock, loose debris, prob. needs to be cleared regularly
SH 75	195.2	195.3	2	larger rocks causing hazard
SH 75	195.7	195.9	2	rock dipping into road cut, regolith prob, but reg. growing on it, no catchment
1	196.3	196.4	1	large rocks, but don't fall
	196.4	196.6	1-2	rocks dip into roadcut, some soil movement, rocks > 6 inches (some boulders - loose), minor catchment
	196.7	196.8	1-2	
	196.9	197.5	③ 1-2	rocks dip toward road, large loose boulders soil, little catchment (sometimes none)
	197.7	197.9	1.5-2	small cuts but loose rocks > 6 in & soil, veg. grows on same, some soil
	198.0	198.1	1-2 2	almost vert. cut, rocks dip into cut, some soil failure, little catchment
	198.1	198.3	1-2 1	low roadcut, loose rock - soil, rock heard
	198.5	198.7	1-2 1	
	198.8	198.9	2-3	tall, and steep, decomposing rock, loose rock > 6 in soil, no catchment, talus slope in some parts
	199.0	199.5	3 3	same as above, no talus, rock falls all the time
	199.5 200.2	200.3 200.3	2-3 2-3	same as above but more vegetation grows on it trees near top show sign of creep
	201.0	201.1	3	slump; mostly soil, large loose boulders, little veg on top
	201.1	201.6	2-3	low at, some large boulders
	201.6	201.7	1-2	hot springs - Snaker-
	201.7	201.9	1-2	low slope, gentle slope, but large rocks
	201.8	201.9	2	talus, gentle slope, lots of veg
	201.9	202.1	3	steep slope, no catchment, rocks @ slope base out of steep slope, large boulders, was block
	202.1	202.4	3	tall, steep, rocks in road
	202.6	202.9	2-3	lots of veg; tall, somewhat angled slope some loose rock strikes a problem, as small talus slope spills onto highway

NOTES: @ mp. 194.1 - sign says "SLIDE AREA NEXT 20 MILES" - as mps increase in volume
 - all these roadcuts face the Salmon River
 - see state highway 75 m.p. 210.5 to 217.4 for notes

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shari Silverman DATE: 8/3/99
 DISTRICT: _____ ORG UNIT: Vol I ORG LOCATION: Miscw, ID
 E-MAIL: silv9579@idaho.gov TELEPHONE: (208) 892-8010

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
3475	159.4	159.5	2	some rocks in catchment / throat
	159.6	159.6	1	
	159.6	160.1 ^{159.6}	2	
	160.1	161.1	1	
	160.1	161.1	1	
	161.2	161.4	1	
	161.6	161.7	1	
	161.8	162.1	1	
	148.3	148.7	1	drabbles down but not a pile
	149.5	149.6	1	NO PROBLEMS
	152.3	152.4	1	
	152.9	153.0	1	
	153.0	153.1	1	
	153.9	154.1	1	
	154.6	154.7	1	
	154.7	155.1	2	
	155.2	155.4	2	
	155.6	155.7	3	dash / rock commonly falls

NOTES:

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shari Silverman Hailey DATE: 8/3/99
 DISTRICT: _____ ORG UNIT: Idaho ORG LOCATION: Idaho Hailey, ID
 E-MAIL: shari.silverman@idaho.gov TELEPHONE: (208) 872-8016

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
St 275	217.4	217.8	2	scree, small catchment, some debris in catchment, lots of veg, fairly stable
	217.8	218.9	1	flat
	218.9	219.1	2-3	tall, steep, scree, but large catchment barrier
	219.1	219.3	2	steep, but lots of veg & large catchment, trees shield signs of creep
	219.3	219.5	1	flat
	219.5	219.9	2	some scree, some steepness, low cu. of rockfall on road, large catchment, lots of veg
	219.9	220.6	1	flat, some w/slope but very shallow w/ catchment
	220.6	221.1	3	scree, tall, no veg, rocks in pavement, curve
	221.1	221.3	2	scree, short slopes, larger catchment
	221.3	221.4	3	scree, tall, small catchment, smaller boulders on road run
	221.4	221.7	2	smaller slopes, still scree
	221.7	222.5	3	very tall, barren, scree slopes, fills catchment and spills into road, steep rock slopes
	222.5	222.8	1	flat (turn of Hailey)
	190.9	191.1	3	
	191.1	192.5	1	
	192.5	194.9	2-3	
	188.7	188.8	2	
	188.8	190.1	1	
	190.1	190.5	2	
	190.5	190.9	1	
	188.1	188.37	2	

NOTES:

see state highway ^{210.5} ~~210.5~~ to 217.4 for notes

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS

ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shari Silverman

DISTRICT: _____ ORG UNIT: 1401/24

ORG LOCATION: Hanley

E-MAIL: _____

TELEPHONE: _____

[illegible]

NOTES:

SEVERITY:

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ROCKFALL SURVEY & INVENTORY FORM

TELEPHONE:

NOTES:

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: _____

DISTRICT: Bliss

ORG UNIT: Bliss

ORG LOCATION: Bliss

DATE: 5/4/99

E-MAIL: slc 95396@idaho.gov

TELEPHONE: (208) 672-2016

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
* US 30	175.8	176.8	1	no rocks on road, covered with gravel, if does cut, stop, but they keep wide ditch clean, low priority for traffic hazard
SH 75	99.9	99.99	2-3	loose debris w/ large loose rocks on top, no ditch
	99.9	100.6	1-2	loose w/ large loose rocks, has ditch
	101.1	101.2	1	
	101.9	101.9	3	
	101.9	102.9	1	
	102.9	103.9	1	
	103.9	103.9	2	
	103.9	104.7	1	
	104.7	105.3	1	
	105.3	105.5	1	loose rubble, lots of fines, but large ditch
	105.5	105.6	1	
	105.6	105.8	1	
	105.9	105.9	1	
	105.9	106.1	1	
	106.1	106.2	1	
	106.2	106.3	1	
	107.3	107.3	1	
	107.4	107.5	1	
	107.5	107.8	1	
	107.8	107.9	1-2	occasional large rock 2
	108.0	108.1	1	
	108.2	108.2	1	

NOTES:

Bliss Maintenance / Mike Ellis said that they rarely had problems with this road, basalt roadcut. The roadcut stands just a few miles down the highway from the Bliss maintenance shed - curves in most of this road

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shan Silverman DATE: 8/4/99
 DISTRICT: Rupert ORG UNIT: Rupert ORG LOCATION: Rupert
 E-MAIL: _____ TELEPHONE: _____

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 77	22.2	22.6	1	? once a year (maybe less), wide ditch - some debris in ditch, never, away from road way, they used to have fr
SH 75	108.3	108.7	1	
	108.8	108.9	2 / 1	side 2, N side 1 - throughout
	109.3	109.7	1	
	111.2	111.43	1	
	111.4	111.5	1	
	112.4	112.5	1	
	112.6	112.7	1	
	112.9	113.4	1	
	113.5	113.6	1	
	114.2	114.4	1	
	114.6	114.8	1	
	116.2	116.3	1	
	119.6	119.7	1	
	119.87	119.9	1	
	121.6	121.9	1	
	123.4	123.7	1	
	125.1	125.2	1	
V	125.46	125.55	1	

NOTES:

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shari Silverman DATE: 8/5/99
 DISTRICT: _____ ORG UNIT: Hanley ORG LOCATION: Hanley
 E-MAIL: _____ TELEPHONE: _____

actually to SH 21

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 75	51.3 75.8	75.8	1	short, nearly vertical, some loose rocks
	51.7 76.2	52.0 76.5	3	scree, tall, debris on nearly paved road, daylighting fractures
	59.1 76.9	59.5 77.3	1-2	tees @ cut top, recently burned area, landslide, tall, steep, no daylighting, but large blocks
	59.8 77.6	77.9	2-3	landslides in some spots w/ large rock debris, some daylighting fractures
	78.2	78.6	1-2	loose rocks near top but mostly stable, tall, daylighting fractures
	78.7	78.9	1-2	daylighting fractures, some landslides
	79.3	79.4	1	
	80.8	80.8	1	
	80.8 81.0	81.3	2	wide catch but daylighting fractures, debris on freshly paved rd., curve
	81.9	82.0	1	
	82.2	82.4	1-2	looks like it cuts sloughs, but it is cut back
	82.5	82.6	1	
	82.8	83.1	2	cont. sloughs into trench, cleaned recently
	83.2	83.3	1-2	daylighting fractures, blocks in trench
	85.6	86.0	1	
	86.2	86.3	1-2	daylighting fractures, but is cut back & vertical
	86.7	86.9	1	vertical, cut back
	88.8 88.9	88.9	1	
	89.9	89.9	1	
	90.1	90.2	1	throughout, curve, but cut back
	90.6	90.7	1	big blocks, looks clean though, vertical
	91.4	91.5	1	
	91.5	91.6	1	
	91.9	92.0	1	
	92.2	92.7	1	

NOTES: • The area near Lawson burned in 1989
 • No former came out to Lawson with me, so severity scale is based upon rocks on nearly paved road, features that remain in other areas graded out, and local knowledge

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Shari Silverman DATE: 8/5/99
DISTRICT: _____ ORG UNIT: Henley ORG LOCATION: Henley
E-MAIL: _____ TELEPHONE: _____

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SN 75	92.7	92.8	2	steep, some debris on other side of road, but big ditch
	93.3	93.4	1	
	93.8	94.6	1	
	94.6	94.7	1	
	94.9	94.9	1	
	95.0	95.0	1	
	95.3	95.4	1	
	95.4	95.7	1	
	95.87	95.8	1-2	tall, vertical - looks clean but some precarious pieces, curve
	95.9 95.9	96.0	1	
	96.0	96.8	1-2	looks like it slowly sloughs, curve, lots of loose rubble & soil
	96.8	96.9	2-3	
	97.0	97.1	1 or 3	looks really bad but has porteur rail & wide trench (looks new) chips on porteur rail
	97.3	97.4	1	
	97.7	97.7	3	
	97.8	97.8	3	
	97.8	98.2 97.9	2-3	
	78.0	98.0	1	
	98.1	98.2	1	
	98.4	98.5	2-3	
	98.6	98.7	1	
	98.8	99.0	1	
	99.1	99.3	1	
	99.4	99.6	1	
	99.7	99.9	1	

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5

EVALUATED BY: Steve Silverman DATE: 7/2/00
DISTRICT: 5 ORG UNIT: _____ ORG LOCATION: Liberty to Preach May 36
E-MAIL: _____ TELEPHONE: _____

[illegible]

NOTES:

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: SHANE SILVERMAN

DATE: 9/7/2/00

DISTRICT: 5 ORG UNIT: _____

ORG LOCATION: North of Montpelier - S of Geneva

E-MAIL: _____

TELEPHONE: _____

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
US 89	30.1	30.3	1	no place to stop
	30.5	30.7	2	↓
	30.9	31.0	2	
	31.0 31.0	31.1 31.1	2	daylighting / no rocks
	31.2	31.3	2	no place to stop
	31.4	31.5	2	↓
	32.0	32.1	2	↓
	32.2	32.3	1	
	32.6	32.7	2	no pullout / debris in ditch
	32.8	32.9	2	↓
	33.2	33.3	2	
	33.3	33.4	2	There is a pullout / debris in ditch
	34.0	34.1	2	no pullout / debris in ditch
	34.1	34.2	2	↓
	34.3	34.6	2	
	34.6	34.7	2	↓
	34.7	34.9	2	There is a pullout / debris in ditch
	34.9	35.4	2	no pullout / debris in ditch
	35.8	35.9	3	no pullout / debris in ditch / fall
	36.2	36.4	2	↓
	36.4	36.6	2	
	37.0	37.1	3	daylighting / debris / no pullout / debris in ditch
	37.1	37.2	3	S. side of cut = 3
	39.8	39.9	1	no pullout / close to Geneva / debris in ditch

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Angela Taylor

DATE: 8/10/99

DISTRICT: 5 ORG UNIT: 1

ORG LOCATION: _____

E-MAIL: _____

TELEPHONE: _____

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
I-15	56.5 57	55.8 3	1	basalt w/ sedimentary overlain
I-15	26	26	1	
SH-36	118.5	114	1	
SH-36	114.2	114.8	1	
SH-36	13.6		1	Left side
SH-36	20.8	20.9 21	1	
US-91	29.5		1	
SH-36	5.5	5.6	1	right side
SH-34	25.5	26	2	
SH-34	107	108	1	
SH-36	12.5		1	
SH-36	13.8	14	1	
SH-36	15.7	15.8	1	
SH-36	16.2		1	
SH-36	16.5	17	1	
SH-36	17.5	—	1	
SH-36	17.6	17.7	1	
SH-36	23.4	23.8	1-2	daylighting bedding + joints
SH-30	445.1		2	
US-89	26.3	40	2-3	under construction
US-30	375.1	375.2	1	at the road ~10-15'
US-30	371.2	371.5	1-2	behind green barrier
US-30	361.9	362	1	
I-15	52.8	52.9	1	S. BOUND LANE, CUT ~4-5' Hx
SH-34	105	106	1	

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: SHANE SILVERMAN DATE: 7 / 3 / 00
 DISTRICT: 5 ORG UNIT: _____ LOCATION: on SH 34 BETWEEN PRASMAN & JONAS
 E-MAIL: _____ TELEPHONE: 91 1" " Downy
215 s of Inbar N Band SH 36 near Workin

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
SH 34	25.1	25.2	1	same rocks/narrow shoulder/good ditch
	25.8	25.9	1	same rocks/ "
	25.9	26.0	2	cut backside / curve / narrow shoulder
SH 91	29.4	29.5	1	Right side
	29.5	29.6	1	Right side
	29.6	29.7	1	left side
I-15	55.1	55.3	1	N band / good shoulder
	56.0	56.3	1	" "
SH 86	114.1	114.2	1	
	114.2	114.3	1	
	114.6	114.817	2	huge boulders / some small boulders on rd

NOTES:

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EVALUATED BY: Angela Taylor DATE: 8/10/99
DISTRICT: 5 ORG UNIT: _____ ORG LOCATION: _____
E-MAIL: _____ TELEPHONE: _____

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ROCKFALL SURVEY & INVENTORY FORM

A. Taylor

DATE:

8/10/99

DISTRICT:

ORG UNIT:

ORG LOCATION:

E-MAIL:

TELEPHONE:

1

NOTES:

<p>SEVERITY:</p> <ol style="list-style-type: none"> 1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up 2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events. 3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.
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(6)
1/8/4

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Jon D. KISHIKAMA

DATE: _____

DISTRICT: 6

ORG UNIT: _____

ORG LOCATION: _____

E-MAIL: _____

TELEPHONE: _____

Score

	ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
211	SH-31	12.893	13.176	1-2	sight distance 216' around curve 6% grade
211	SH-31	13.293	13.556	1-2	sight dist. 183' on curve, clean 1x/yr
175	SH-31	11.769	11.808	1-2	" 294' sharp curve 4% grade
157	SH-31	14.446	14.597	1-2	207' sight on curve, 5% grade
151	SH-31	15.766	15.967	1-2	483' curve, 3% grade clean 1x/yr
139	SH-31	9.326	9.374	1	717' sight, long curve
127	SH-31	10.369	10.437	1	sight ∞, clean 1x/yr
115	SH-31	7.259	7.329	1	sight 780' in curve, clean 1x/yr
489	US-26	388.850	389.398	3	sight 345' no catchment in areas
*441	US-26	374.255	374.797	2	sight 363' 1-2x/yr clean up
271	US-26	374.070	374.213	2	sight 195' sharp curve
253	US-26	391.427	391.684	1-2	sight 339' 5% grade, 1x/yr clean
237	US-26	386.869	387.140	1-2	sight 1596' 5% grade clean 1x/yr
237	US-26	397.801	397.920	2	sight 816' 5% grade, clean 1x/yr
213	US-26	390.690	391.214	1-2	" 475', variable grade, clean 1x/yr
177	US-26	388.023	388.965	1	325' curve, 5% grade ck daily, clean 1x/yr
159	US-26	387.310	387.868	1	778' 5% grade, clean 1x/yr
141	US-26	368.700	369.179	1-2	789' 6% grade, curve
177	US-93	139.905	140.670	1	424' sight, winding rd,
*385	SH 47	11.411	11.610	2-3	clean 2x/yr, ck 2x/day, sight 150'
385	SH 47	11.941	12.319	2-3	120' sight, curve, clean 2x/yr, ck 2x/day
263	US 20	365.631	365.699	2	720' sight, 16% grade, 2x/yr, 2x/day

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Jon D. KISHIYAMADATE: 6/23/98DISTRICT: 6 ORG UNIT: _____ ORG LOCATION: _____

E-MAIL: _____ TELEPHONE: _____

Score	ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
Herb Drexler	245 US-20	366.595	366.852	2	Sight 570' long curve, 6% grade, 2x/yr, 2x/day
	231 US-20	366.876	367.311	2	375' long curve, 6% grade, 2x/yr, 2x/day
	221 US-20	367.544	368.246	2	531' long curve, 6% grade, 2x/yr, 2x/day
	203 US-20	364.135	364.428	2	960' 6% grade, 2x/yr, 2x/day
	131 SH-32	7.979	8.068	1-2	1200' clear, 2x/yr, 2x/day
Challis Section Bill Vermaas	411 US-93	266.376	267.268	3	243' winding sect, mult. clean up/yr
	*373 US-93	273.445	273.649	3	204' Sharp curve, 2x/yr, hazards 3-4
	*387 US-93	148.733	150.090	1-2	292' winding, 5% grade, stable, 1x/yr
	357 US-93	264.467	264.713	2-3	273' winding, several x/yr
	*355 SH-75	222.869	223.373	2	330' winding, 1-2x/yr
	333 US-93	271.919	272.257	2	159' sharp curve, 2x/yr
	✓301 SH-75	220.682	222.537	2	618' winding, 1-2x/yr
	301 US-93	259.588	260.051	2	301' long hazard area, winding
	✓301 SH-75	231.452	231.757	2-3	456' curve, 2x/yr, hazard
	*283 SH-75	218.880	219.112	1-2	516' curve, 1-2x/yr, barrier retains
	*283 SH-75	236.269	236.501	2	525' long curve, 1-2x/yr, lots of debris across
	*279 US-93	263.870	264.141	3	174' winding, 2x/yr, bad day light, not bad in road
	279 US-93	270.684	270.816	2	760' curve, 2x/yr, reg. activity
	✓279 US-93	267.534	267.687	2-3	237' winding, 2x/yr, reg. activity
	*276 SH-75	223.487	224.275	2	315' winding, 1-2x/yr, reg. activity
	✓247 SH-75	239.832	240	2	726' long curve, 1x/yr
	✓231 US-93	269.751	269.912	2	420' winding, 2x/yr, reg. activity
	*227 SH-75	225.647	225.859	2	303' curve, 2x/yr
	223 US-93	258.879	259.177	2	426' winding, 1x/yr, reg. activity

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: Jon D. KISHIYAMADATE: 7/9/98

DISTRICT: _____ ORG UNIT: _____

ORG LOCATION: _____

E-MAIL: _____

TELEPHONE: _____

ROUTE	BEGIN M. P.	END M. P.	SEVERITY (1-3)	ADDITIONAL COMMENTS
US-93	260.821	261.361	1-2	384' winding, 1x/yr
SH-75	232.840	232.964	1-2	441' long curve, 1x/yr
SH-75	224.566	224.810	1	1200' long curve, 1-2x/yr, reg activity
US-93	257.757	257.838	1-2	525' curve, 1x/yr
SH-75	236.664	236.785	1	510' long curve, 1-2x/yr
US-93	258.081	258.288	1	1014' 1x/yr
US-93	263.494	263.701	1-2	339' winding, 1x/yr
SH-75	219.838	219.924	1-2	411' curve, 1-2x/yr, potential for lg. rx
SH-75	235.021	235.229	1	Sight ~ 100 1-2x/yr
SH-75	225.059	225.220	1	606' curve, 1-2x/yr
US-93	297.402	298.354	3	585' winding section curve many falls 1-2
	286.452	286.486	3	280' winding, sharp curve, lots of activity, 3x/yr clear-up
	293.186	293.667	1-2	519' winding, long curve, 2x/yr clean-up
	281.487	281.887	2-3	304' winding, sharp curve, reg activity, sev. x/yr
	296.552	296.717	1-2	387' sharp curve, little activity, no catchment fall in road
	319.434	319.727	3	546' sev. x/yr, auto accidents, lots of activity
* *	324.267	324.756	* 3+	849' winding, sev. x/yr, bad day, light rain, clear-up of road daily
	287.657	287.894	2	480' 2x/yr, regular activity
	289.985	290.810	2-3	336' 3x/yr, a lot of activity
	283.109	283.449	2	291' sharp curve, several x/yr
	294.250	294.738	2	348' 2x/yr, winding, reg. activity
	314.479	314.990	1-2	546' winding, 2x/yr, a lot of activity
	316.757	317.403	2	570' winding, sev. x/yr, reg. activity
US-93	318.440	318.836	1-2	828' winding, long curve, sev. x/yr, barrier mostly catching rx

NOTES:

* Forman concerned areas
 ** Raters next choice to be fixed

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IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL SURVEY & INVENTORY FORM

EVALUATED BY: JON D. KISHIYAMA

DATE: _____

DISTRICT: _____ ORG UNIT: _____

ORG LOCATION:

E-MAIL: _____

TELEPHONE: _____

[illegible]

NOTES:

SEVERITY:

1. Rock debris occasionally sloughs onto the roadway, with a low volume that usually requires only minor clean up
2. Rock debris occurs on the roadway several times a year with the larger rocks (> 6 inches) causing hazardous conditions during some of these events.
3. Rock debris occurs on the roadway frequently or in such a manner that would create a hazardous condition, such as rockfall on a curve. Such locations often require immediate attention during or after storm activity.

Appendix B
Rockfall Hazard Rating Form

IDAHO TRANSPORTATION DEPARTMENT - DIVISION OF HIGHWAYS
ROCKFALL EVALUATION FORM

ROAD _____ FROM M. P. _____ TO M. P. _____

EVALUATED BY _____ DATE _____

ROADCUT HEIGHT _____ ROADCUT WIDTH _____

RATING				POINTS 1	POINTS 3	POINTS 9	POINTS 27	POINTS 81	SCORE
Traffic (ADT)				< 200	200 - 500	500 - 1000	1000 - 3000	> 3000	
Sight Distance				Adequate Stopping Distance Full Shoulder	Good Visibility & Shoulder Width	Moderate Visibility & Shoulder Width	Limited Visibility & Shoulder Width	Very Limited Visibility & Shoulder Width	
Maintenance/ Clean Up				< 1 day on site disposal	1 - 2 days on-site disposal or < 1 day off-site disposal	3 - 4 days on-site disposal or 1-2 days off-site disposal	> 4 days on-site disposal or 3 - 4 days off-site disposal	> 4 days off-site disposal	
Precipitation/ Climate				< 10" Precipitation Mild Winters	10"-15" Precipitation Some Freeze/ Thaw	15"-25" Precipitation Short Freezing Periods	25"-35" Precipitation Long Freezing Periods	>35" Multiple Freeze/ Thaw	
Ditch Dimensions				Meets Ritchie's Criteria	Adequate Width Inadequate Depth	Moderate Catchment (50-90% Width)	Limited Catchment (20-49%)	No Catchment	
Roadway Width Including Paved Shoulders (feet)				> 44	38-44	30-38	22-30	<22	
G E O L O G I C A L	H E A Z A R D S	C A S E 1	Structural Condition	Massive, No Fractures Dipping Out of Slope	Discontinuous Fractures, Random Orientation	Fractures from Wedges	Discontinuous Fractures Dipping Out of Slope	Continuous Fractures Dipping Out of Slope	
			Rock Friction	Rough Irregular	Undulating	Planar	Smooth Slickensides	Clay Gouge Faulted	
		C A S E 2	Structural Condition	None or 1 Differential Erosion Features	Few Differential Erosion Features	Occasional Erosion Features	Many Erosion Features	Major Erosion Features	
			Difference in Erosion Rates	No Difference or Very Small Difference	Small Difference	Moderate Difference	Large Difference Favorable Structure	Large Difference Unfavorable Structure	
	Slope Continuity			No Launching Features	Possible Launch Features	Some Minor Features	Many Launching Features	Major Launching Features	
	Block Size			<6 inches	6-12 inches	1-2 feet	2-5 feet	>5 feet	
	Rockfall Frequency			< 1/ year	1 - 3/ year	4 - 10/ year	Often & After Significant Storms	Very Often (< weekly)	

Priority

Total Score

Geological Characteristics:

Case 1: - Joints, bedding planes or other discontinuity is the dominant structural feature.

Case 2: - Differential erosion is the dominant structural feature.

Remarks/ Photo Listings:
